

## CLAIMS

What is claimed is:

1        1.     A method comprising:  
2              forming a lower cladding layer, said lower cladding layer having at least  
3              one waveguide support;  
4              forming a core material onto said waveguide support; and  
5              forming an upper cladding layer over said core material.

1        2.     The method of Claim 1 wherein said upper cladding layer and said  
2              lower cladding layer surround said core material.

1        3.     The method of Claim 1 wherein said core material is formed to be  
2              a substantially triangular shape.

1        4.     The method of Claim 1 wherein said core material is deposited  
2              using a high density plasma chemical vapor deposition (HDPCVD) process.

1        5.     The method of Claim 1 wherein said core material is an oxide.

1        6.     The method of Claim 1 wherein said lower cladding layer is  
2              formed by:  
3              blanket depositing lower cladding material onto a substrate; and  
4              patterning and etching said lower cladding material to form said  
5              waveguide support.

1           7.       The method of Claim 1 wherein said core material is formed to be  
2       a substantially semi-circular shape.

1           8.       The method of Claim 1 wherein said core material is doped with a  
2       rare earth element.

1           9.       The method of Claim 1 wherein said core material and said upper  
2       cladding layer is deposited *in situ* with each other.

1           10.      The method of Claim 1 wherein said waveguide support has a  
2       width much less than a height.

1           11.      A method comprising:  
2           forming a lower cladding layer, said lower cladding layer having at least  
3       one waveguide support;  
4           forming a core material onto said waveguide support using a high density  
5       plasma chemical vapor deposition (HDPCVD) process, wherein said core material  
6       is an oxide; and  
7           forming an upper cladding layer over said core material, wherein said  
8       upper cladding layer and said lower cladding layer surround said core material.

1           12.     The method of Claim 11 wherein said lower cladding layer is  
2     formed by:

3                 blanket depositing lower cladding material onto a substrate; and  
4                 patterning and etching said lower cladding material to form said  
5     waveguide support.

1           13.     The method of Claim 11 wherein said core material is doped with a  
2     rare earth element.

1           14.     The method of Claim 11 wherein said core material is formed to be  
2     a substantially triangular shape.

1           15.     The method of Claim 11 wherein said core material is formed to be  
2     a substantially semi-circular shape.

1           16.     The method of Claim 11 wherein said core material and said upper  
2     cladding layer is deposited *in situ* with each other.

1           17.     An optical waveguide comprising:  
2                 a lower cladding layer, said lower cladding layer having at least one  
3     waveguide support;  
4                 an oxide core material formed into a substantially triangular shape onto  
5     said waveguide support; and  
6                 an upper cladding layer formed over said core material.

1           18. The waveguide of Claim 17 wherein said core material is deposited  
2 using a high density plasma chemical vapor deposition (HDPCVD) process.

1           19. The waveguide of Claim 17 wherein said core material is doped  
2 with a rare earth element.